SOCIAL REINFORCEMENT AND BEHAVIOR CHANGE—SYMPOSIUM, 1962

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1. Behavior Theory and Identificatory Learning*

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The results of a series of experiments indicate that much of a child's social behavior is acquired through imitation of adult models, and that a model's nurturance and power status facilitate such learning. Exposure of children to real-life and film-mediated aggressive models not only increased children's aggressive behavior to subsequent frustration but also shaped the form of their aggression. The implication of these studies for a social learning theory of aggression and personality development are discussed.

MOST CURRENT RESEARCH on social learning is focused on the shaping of new patterns of behavior through rewarding and punishing consequences. Despite the widespread acceptance and application of differential reinforcement principles to human learning, it is doubtful that many social responses would ever be acquired if social training proceeded solely by these methods. This is particularly true of behavior for which there is no reliable eliciting stimulus apart from the cues provided by others as they exhibit the behavior. If a child had no occasion to hear speech, for example, or, in the case of a deaf-blind person, no opportunity to watch the mouth and laryngeal responses of a ver-

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balizing model,[13] it would probably be impossible to teach him the kind of verbal responses that constitute a language.

Even in cases where some stimulus is known to be capable of eliciting an approximation to the desired behavior, the process of learning can be considerably shortened and accelerated by the provision of social models. Indeed, informal observation of the process of social learning as it occurs in naturalistic situations reveals that the behavior of models in one form or another is utilized to some degree in facilitating learning, regardless of whether the person is being taught the responses necessary for playing golf, swimming, performing surgical operations, flying an airplane or conducting psychotherapeutic interviews. In fact, in many cultures "the word for 'teach' is the same as the word for 'show,' and the synonymity is literal."[19] In one Guatemalan subculture, for example, the acquisition of complex vocational skills proceeds entirely on the basis of imitation.[16] In learning to operate a cotton textile machine, the young Cantelense apprentice stands beside the machine and observes the operator perform the set of responses necessary for running the loom. During the training period the learner asks no questions and is given no verbal instructions or practice in operating the textile machine. As soon as the apprentice feels that she has mastered the necessary sequence of responses through observation, the machine is turned over to her. Typically, on the first trial she performs almost as skillfully as did the model operator.

Adult-role behavior is transmitted to young children in a similar manner. The young Cantelense girl is provided with a miniature water jar, a small broom and a tiny grinding stone modeled after her mother's domestic utensils. The child constantly observes and imitates her mother's behavior, with little or no direct tuition. Although parents in our culture generally do not provide their young daughters with miniature stainless steel kitchens, they do supply them with a varied array of play materials—toy kitchen ensembles, dolls with complete nursery equipment and wardrobes, cooking utensils and other junior-sized homemaker kits—that serve much the same purpose. In games utilizing such stimulus material, children frequently reproduce the entire parental-role behavior—including the appropriate mannerisms, voice inflections, and attitudes—which the parents have never directly attempted to teach. These examples illustrate the efficacy of imitative learning, since children acquire complex patterns of social behavior *in toto,* without proceeding through a slow, laborious response-acquisition process involving differential reinforcement and extinction.

This type of learning is generally labeled "imitation" in social learning theory, and "identification" in most theories of personality. These concepts are treated in the present paper as synonymous, because both encompass the same behavioral phenomenon, that is, the tendency for a person to match the behavior or attitudes as exhibited by actual or symbolized models. Numerous distinctions have been proposed, of course, at one time or another. Some writers, for example, reserve the term "identification" for matching behavior falling within a class of responses defined as meanings, and "imitation" for highly specific acts.[14] Similarly, Parsons[17] contrasts imitation to identification in terms of specificity and diffuseness of learning, with the additional qualification that a "generalized

cathetic attachment" is an essential antecedent of identification but unnecessary or absent in the case of imitation. Others define imitation as matching behavior occurring in the presence of the model, and regard identification as involving the performance of the model's behavior in the latter's absence.[15]

Distinctions can be drawn between these and other related terms (for example, introjection and incorporation) based on certain stimulus, mediating or response variables. However, one might question whether it is meaningful to do so, since essentially the same learning process is involved regardless of the content of what is learned, the object from whom it is learned, or the situation in which the relevant behavior is emitted. Therefore, in the interests of clarity, precision and parsimony, I shall employ a single concept, imitation, to refer to the occurrence of matching behavior.

The findings of a series of experiments I have recently conducted on imitation throw some light on this process of learning.

EFFECTS OF NURTURANCE ON IMITATION

First, consider an experiment that was designed to test the influence of nurturance on imitation.[3] If the behavioral attributes of a model are repeatedly paired with positive reinforcement, the model's characteristics take on secondary reinforcement value for the child and, consequently, should be imitated to a greater extent than if the model's behavior had not been positively conditioned. To test this prediction, nursery school children were subdivided into a nurturant and nonnurturant experimental condition.

In the *nonnurturant* condition a female in the role of the model brought the child to the experimental room and, after instructing him to play with toys that were spread on the floor, she busied herself with paper work at a desk, totally ignoring the child.

With children in the *nurturant* condition, in contrast, the model sat on the floor close to the child. She responded readily to the child's bids for help, approval and attention, and in general was positively demonstrative and rewarding to the child.

Immediately following the second social interaction session, the experimenter entered the room and instructed the model and the child that they were going to play a game in which they would take turns in guessing which of two boxes contained a picture sticker. In executing each trial, the model exhibited relatively novel verbal, motor and aggressive responses that were totally irrelevant to the discrimination task to which the child's attention was directed. At the starting point, for example, the model made a verbal response and then marched slowly toward the appropriate box repeating, "March, march, march." On the lid of each box was a rubber doll, which the model knocked off aggressively. She emitted additional verbal responses as she raised the lid of the container and removed a sticker. The child then took his turn and the number of the model's responses he reproduced was recorded.

The expected facilitating effect of nurturance on imitation was clearly confirmed. Children who experienced the prior nurturant relationship with the model marched and verbalized imitatively, and reproduced other responses resembling that of the model to a substantially greater extent than did chil-

den who were in the nonnurturant group (TABLE 1). Aggression, however, was readily imitated by the children, regardless of the quality of the model-child relationship.

TABLE 1

SIGNIFICANCE OF DIFFERENCES IN IMITATIVE BEHAVIOR EXHIBITED BY CHILDREN IN THE NURTURANT AND NONNURTURANT EXPERIMENTAL CONDITIONS

Response category	*Number of children imitating*		p
	Nurturant (N=20)	*Nonnurturant* (N=20)	
Nonaggressive behavior	15	7	.04
Marching	13	5	.05
Verbal behavior	9	2	.05
Other imitative responses	6	1	.06
Aggressive behavior	20	16	ns
Partially imitative verbal responses	12	5	.04

Some additional evidence that the model's behavior may have taken on positive valence and was reproduced by the children for its intrinsically rewarding value is provided by the fact that, while waiting for the next trial, children in the nurturant group, unlike those in the nonnurturant condition, not only marched to the boxes but also marched about the experimental room repeating, "March, march, march."

The finding that children in the nurturant group, as compared with those in the nonnurturant condition, displayed considerably more verbal behavior apart from their imitative verbalizations indicates that exposure to a model possessing rewarding qualities not only facilitates imitation of the specific characteristics exhibited by the model, but also increases the occurrence of behavior of a whole response class (for example, verbal behavior).

GENERALIZATION OF IMITATIVE AGGRESSION IN THE ABSENCE OF THE MODEL

In the preceding study, imitative responses were elicited in the presence of the model. A more decisive test of imitative learning is the demonstration of the generalization of imitative responses to a setting from which the model is absent. Therefore, a second experiment was conducted[5] in which one group of nursery school children observed aggressive adult models, and a second group viewed models who were subdued and nonaggressive in their behavior. Half the children in the aggressive and nonaggressive conditions observed same-sex models, while the remaining children in each group viewed models of the opposite sex. A control group of children who had no exposure to the models was also included.

Children in the *aggressive model condition* observed the model perform a number of fairly unique aggressive responses toward a large, inflated plastic doll. These were to be scored as imitative aggressive acts when reproduced later by the child. For example, the model sat on the doll and punched it repeatedly in the nose, pommelled it on the head with the mallet, tossed the doll in the air aggressively, and kicked it about the room. This sequence of physically aggressive acts was interspersed with distinctive verbally aggressive responses.

With children in the *nonaggressive model* condition, in contrast, the model assembled the tinker toys in a subdued manner, totally ignoring the doll.

Following the exposure session, all children were mildly frustrated before being tested for delayed imitation of the behavior of the model. They then spent 20 minutes in an experimental room containing a variety of toys including

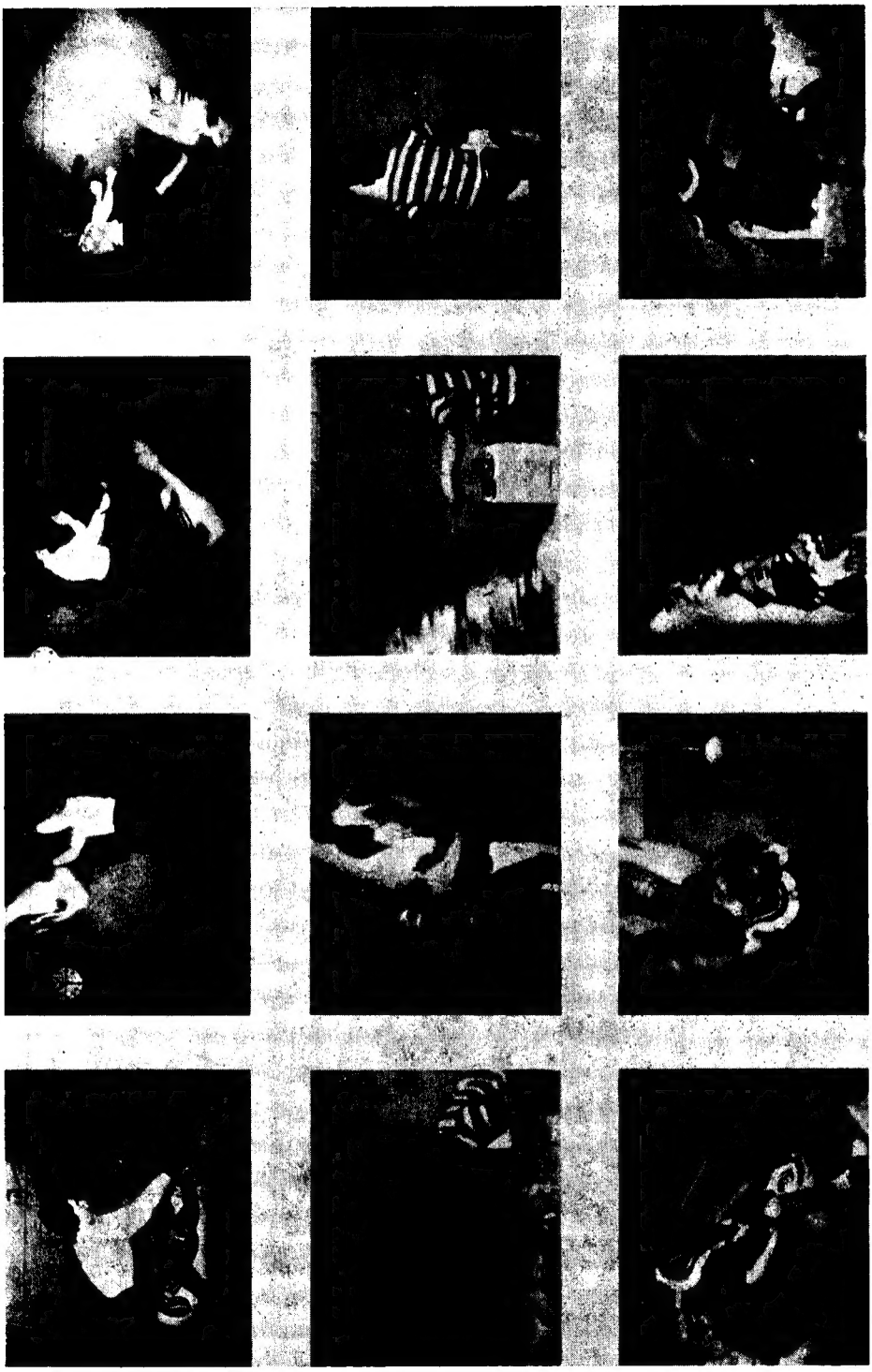

FIGURE 1. Children reproducing the aggressive behavior of the female model they had observed on film. (From A. Bandura, D. Ross and S. A. Ross, *Imitation of Film-Mediated Aggressive Models.*[5])

some that could be employed in imitative or nonimitative aggression. The children's behavior was rated in five-second intervals by observers who witnessed the sessions through a one-way mirror.

Before discussing the findings, I would like to describe two additional experimental treatments conducted as part of a subsequent study,[6] which replicated the design of the present experiment in every detail except that the aggressive models were presented on film.

IMITATION OF FILM-MEDIATED AGGRESSIVE MODELS

Most of the research on the possible effects of film-mediated stimulation upon subsequent aggressive behavior has focused primarily on the need-reducing function of fantasy. While the experimental evidence for the catharsis theory is equivocal, the modeling influence of pictorial stimuli has received little research attention. In view of the fact that children are exposed to televised stimulation for approximately one-sixth of their waking hours,[20] it is of considerable interest to determine the extent to which film-mediated human and cartoon models may serve as an important source of imitative behavior, and to compare their effects to that of real-life models.

Children in the *human film-aggression condition* were simply shown films of the same adult male and female who performed in the real-life condition in the previous experiment. Similarly, the aggressive behavior they displayed in the film was identical with their real-life performances.

For children in the *cartoon film-aggression condition,* a film projected on a lenscreen of a television console showed the female model costumed as a black cat, pommelling the plastic doll with the mallet, sitting on it and punching it in the nose, tossing the doll in the air and kicking it about the room.

In both film conditions, at the conclusion of the film, the children were subjected to the frustration experience, and then observed in the test situation.

While children who observed the real-life and the film-mediated models did not differ from each other, all three groups performed approximately twice as much aggression as did the children in either the control group or the nonaggressive model condition. The corresponding mean total aggression scores for children in the real-life, human-film, cartoon-film, control and nonaggressive model groups were 83, 92, 99, 54 and 42, respectively.

Exposure of children to models displaying aggression not only increased their aggressiveness, it was also highly effective in shaping the form of the children's aggressive behavior. Illustration of the extent to which some of the children became virtually "carbon copies" of their models in aggressive behavior is presented in FIGURE 1 (page 595). The top frame shows the female model performing the four novel aggressive responses; the lower frames depict a boy and a girl reproducing the behavior of the female model they had observed earlier on film.

Children who observed real-life aggressive models displayed more imitative aggression than children who had viewed the cartoon model. The real-life and human-film aggressive groups, however, did not differ in this respect. Overall findings based on a variety of measures of nonimitative aggression revealed that exposure to human models portraying aggression on film was the most influential method of eliciting aggressive behavior. A similar heightening of ag-

gressive tendencies in adults following exposure to aggressive excerpts from a commercial movie has been demonstrated recently by Walters, Llewellyn-Thomas and Acker.[21]

In general, the aggressive male model was more influential than the female model in eliciting aggressive behavior. It was evident from the children's spontaneous comments that, even at this early age, aggression was clearly sex-typed as appropriate masculine behavior. This probably also accounts for the fact that girls displayed significantly less imitative and nonimitative aggression than boys did, but displayed more partially imitative behavior in which the aggressive component of the model's responses was omitted.

The results yielded by these studies also provide some evidence that the behavior exhibited by adult models may be highly influential in shaping children's frustration-reactions. For example, children who observed the aggressive models displayed significantly more aggression (both imitative and nonimitative) when subsequently frustrated, than children who were equally frustrated but had no prior exposure to models exhibiting aggression. Moreover, children who viewed nonaggressive models displayed more nonaggressive behavior to frustration in comparison to the aggressive model groups, and less aggression than the control subjects.

Identification with the aggressor,[10] whereby a person presumably transforms himself from an object to an agent of aggression by adopting the attributes of an aggressive, threatening model in order to allay anxiety, is widely accepted as an explanation of the imitative learning of aggression.

There is considerable evidence that children of aggressively punitive parents frequently exhibit aggressive patterns of behavior. It does not necessarily follow, however, that the presence of aggression in parent and child is an outcome of a process of defensive identification. In fact, the findings yielded by studies of child-training antecedents of aggressively antisocial adolescents[8] and of young, hyperaggressive boys,[1] provide some evidence that the similarity is, in part, a function of direct training in discrimination. Typically the parents of hyperaggressive boys punish aggression directed toward themselves, but encourage and reward a son's aggressive behavior directed toward persons outside the home.

The necessity of invoking a defensive mechanism can be further questioned by the fact that, in the experimental studies, children readily imitated aggressive adult models who were more or less neutral figures and constituted no threat whatsoever. Apparently, the mere observation of aggression was a sufficient condition for the imitative learning of aggressive behavior. Whether or not the children would have exhibited a greater amount of imitative aggression had they been treated by the models in a threatening manner is, of course, unknown.

INFLUENCE OF REINFORCEMENT AND SOCIAL MODELS ON MORAL JUDGMENTS

Most of the theorizing in the area of personality development has been guided by various forms of stage theories. According to Freudian theory,[11] for example, personality changes are programmed in an oral-anal-phallic sequence; Erickson[9] characterizes personality development in terms of an eight-stage sequence; Gesell[12] describes marked, predictable cyclical changes in behavior over yearly or even shorter

temporal intervals; and Piaget[18] delineates numerous different stages for different segments of behavior.

Although there appears to be relatively little consensus among these theories concerning the number and content of stages considered to be crucial, all share the assumption that social behavior can be categorized in terms of a relatively prefixed sequence of stages with varying degrees of continuity or discontinuity between successive developmental periods. Typically, the emergence of these presumedly age-specific modes of behavior is attributed to ontogenetic factors, rather than to experiental events, which are likely to be favored in a social learning theory of the developmental process.

Recently McDonald and I completed an experiment in which a social learning theory combining both the principles of operant conditioning and imitation was applied to a developmental problem that has been approached from a stage point of view.[4]

According to Piaget,[18] one can distinguish two clear-cut stages of moral judgments demarcated from each other at approximately seven years of age. At the first stage, defined as *objective responsibility*, children judge the gravity of a deviant act in terms of the amount of material damages, and disregard the intentionality of the action. In contrast, at the second or *subjective responsibility* stage, children judge conduct in terms of its intent rather than its material consequences. While these stages are prefixed (for example, Piaget reports that young children are relatively incapable of adopting a subjective orientation, and he was unable to find a single case of objective morality in older children), the factors responsible for the transition from one stage to the other are not entirely clear.

The purpose of this experiment was to demonstrate that moral orientations are less age-specific than implied by Piaget, and that children's moral judgments can be altered and even reversed by the manipulation of reinforcement contingencies, and by the provision of appropriate social models.

In the first phase of the experiment (the base test), following the procedure employed by Piaget, children were administered pairs of story items each of which described a well-intentioned act that resulted in considerable damage, contrasted with a selfishly or maliciously motivated act producing minor consequences. The children were asked to select which of the two story characters performed the "naughtier" act.

On the basis of their initial performances, children who were decidedly subjective in their moral orientation and those who gave predominantly objective responses were assigned to one of the three following experimental conditions.

One group of children observed adult models who expressed moral judgments running counter to the children's orientation, and the children were reinforced with approval for adopting the models' evaluative responses. A second group observed the models but received no reinforcement for matching the models' behavior. The third group had no exposure to the models but were reinforced whenever they expressed moral judgments that ran counter to their dominant evaluative tendencies. Thus the experimental design permitted a test of the relative influence of direct social reinforcement, of the behavior of models, and of these two factors combined in shaping children's moral judgments.

Following the experimental treatments, the children were administered

additional pairs of stories by a different experimenter, to obtain further information about the generality and the stability of the changes in judgmental responses in the absence of any models or social reinforcement. This constituted the post-test.

It was predicted that the combined use of models and social reinforcement would be the most powerful condition for altering the children's behavior, and that the provision of models alone would be of intermediate effectiveness. Since the presence of a strong, dominant response limits the opportunity for reinforcement of an alternative response that is clearly subordinate, it was expected that social reinforcement alone would be the least effective of the three treatment methods.

FIGURE 2 presents the curves for the acquisition and maintenance of objective moral-judgment responses by subjective children for each of the three experimental treatments.

Statistical analyses of these data reveal that children who simply observed objective models and those who were reinforced for matching their model's moral judgments significantly altered their moral orientation in the direction of objectivity. Of even greater interest is the finding that children in these two conditions remained objectively oriented in their post-experimental judgmental behavior.

Contrary to prediction, the provision of models alone was as effective in modifying children's moral judgments as was the experimental treatment combining models with direct social reinforcement. In accordance with expectation, however, the conditions involving modeling procedures proved to be considerably more powerful than operant conditioning, which produced a slight, although not significant, increase in objective judgments. The corresponding results for the objective children treated subjectively are presented in FIGURE 3.

The over-all findings are essentially the same as those obtained for the sub-

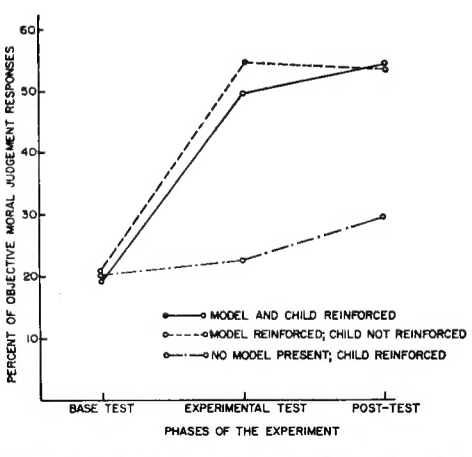

FIGURE 2. Mean percentage of objective moral judgment responses produced by subjective children on each of three test periods for each of three experimental conditions. (From A. Bandura, *Social Learning through Imitation.*[2])

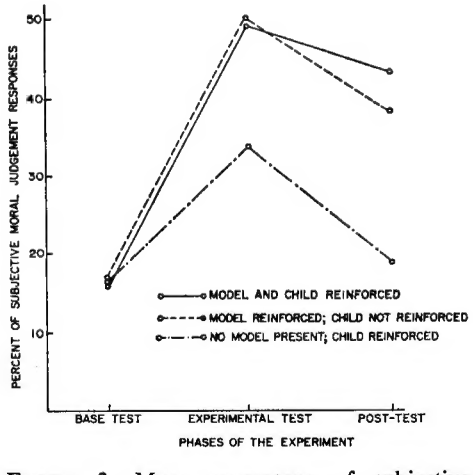

FIGURE 3. Mean percentage of subjective moral judgment responses produced by objective children on each of three test periods for each of three experimental conditions. (From A. Bandura, *Social Learning through Imitation.*[2])

jective children. The experimental treatments were highly influential in changing the children's moral orientations from objective to subjective. Although the differences among the three treatment groups did not reach statistical significance, evidently the conditions utilizing models were the main contributors to the observed changes.

The two sets of data considered together clearly demonstrate that, at least insofar as moral judgments are concerned, the developmental sequence is in no way prefixed or invariant. Indeed, the developmental stages can be readily altered through the application of appropriate social learning principles, modeling procedures being particularly effective in this respect.

The imitation experiments to which reference has been made have been confined to two-person groups. Currently we are studying imitation in three-person groups simulating different constellations of the nuclear family. Results from these experiments reveal that children are considerably more imitative of adults who control rewarding resources than of rivalrous adults who consume these resources, and that power inversions promote cross-sex imitation.[7] An experiment comparing imitation of aggressive models who are punished for exhibiting such behavior with that of models who amass considerable rewards through their aggression has also been completed.

The results yielded by this series of experiments strongly suggest that much of a child's behavior repertoire is acquired through imitation by the child of attitudes and patterns of behavior exhibited by adult models. Once acquired, these personality patterns can be effectively strengthened and maintained by direct reinforcement procedures.

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2. Reinforcement, Verbal Behavior and Psychotherapy*

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In recent years a "new" approach to investigating the psychotherapy process utilizing social reinforcement and behavior control has gained increasing prominence. The research studies in this area, such as verbal operant conditioning, are reviewed, with their implications for personality theory, clinical applications and especially for the influencing of value systems.

A SERIES of recent investigations has great relevance for understanding the process of psychotherapy. A "revolution" in ways of conceptualizing psychotherapy appears to be in progress. This paper provides a review of these studies and their implications.

The key concepts in this new approach to psychotherapy are social reinforcement and behavior control. Social reinforcement refers to the use and manipulation of environmental stimuli to reward preselected classes of behavior in such a way as to increase the probability of their reoccurring. Psychotherapy is viewed as a lawful, influence process within the broader context of studies of behavior control, which studies investigate the conditions that change behavior. Investigations belonging in this psychology of behavior control include studies of attitude influence, placebo effects, conformity, hypnosis, psychotherapy, sensory deprivation, "brainwashing" and operant conditioning.

These studies emphasize the effects of reward and manipulation of environmental stimuli in controlling behavior. The terms used to indicate the actual behavior-influence situation include *psychotherapy, conditioning, reinforcement, coercion, influence, persuasion,*

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